

Amendments to the Claim:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (previously presented). A system comprising a stripper device for stripping volatile compounds from a liquid medium, said stripper device comprising:

a) a shunt to which aqueous liquid medium comprising volatile compounds can be diverted in the form of a side stream to at least one fermentor and/or at least one biogas reactor,

b) means for diverting aqueous liquid medium comprising volatile compounds to the shunt from said at least one fermentor and/or at least one biogas reactor,

c) an evaporator device comprising a sample of aqueous liquid to which heat obtained from an external heat source can be added, wherein a reduction of the pressure in said evaporator to a first pressure below a predetermined reference pressure generates cold steam,

d) means for directing the cold steam generated by the evaporator of c) through said aqueous liquid medium comprising volatile compounds in the shunt of the stripper device at said pressure below a predetermined reference pressure, thereby stripping off volatile compounds and obtaining a cold, volatile compound-comprising steam,

e) a first condensing device,

f) means for diverting said cold volatile compound-comprising steam at said pressure below the predetermined reference pressure to the first condensing device, and condensing in a first

condensing step in said first condensing device said cold volatile compound-comprising steam at said pressure below a predetermined reference pressure, thereby obtaining a first condensed aqueous liquid medium comprising said volatile compounds and vapor not condensed by the first condensing device,

g) a stripper unit for stripping volatile compounds at said predetermined reference pressure or at a second pressure higher than said predetermined reference pressure,

h) means for diverting said first condensed aqueous liquid medium comprising volatile compounds obtained in f) to the stripper unit, and stripping off at least part of the volatile compounds from said first condensed aqueous liquid medium comprising volatile compounds by injecting hot aqueous steam at said reference pressure or at the higher second pressure, thereby obtaining a hot volatile compound-comprising steam and aqueous liquid stripped off at least part of said volatile compounds,

i) a second condensing device, and

j) means for diverting said hot volatile compound-comprising steam to a second condensing device, and condensing said hot volatile compound-comprising steam, thereby obtaining a condensate comprising volatile compounds.

2 (previously presented). The system according to claim 1, wherein the stripper device further comprises a further condensing device and means for diverting said vapor not condensed by the first condensing device to the further condensing device for removing at least some of the remaining volatile compounds from said vapor not condensed by the first condensing device, said further condensation involving the step of washing the vapor in a counter current of aqueous liquid, thereby obtaining a combined aqueous liquid fraction comprising

the first condensed aqueous liquid medium from the first condensing device and volatile compounds condensed in the further condensing device, and optionally vapor not condensed by the further condensing device.

3 (previously presented). The system according to claim 2 further comprising means for diverting said combined aqueous liquid fraction to the stripper unit.

4 (previously presented). The system according to claim 2, wherein the stripping of volatile compounds in the stripper unit results in the formation of a stripped aqueous liquid medium comprising at the most 200 ppm volatile compounds.

5 (previously presented). The system according to claim 4, wherein said second condensing device comprises two heat exchangers for cooling said hot volatile compound-comprising steam in two steps, said cooling generating said condensate comprising volatile compounds in two steps, said second condensing device further generating a heating source, said system further comprising means for directing said heating source to said evaporator for heating aqueous liquid in said evaporator.

6 (previously presented). The system according to claim 1 further comprising means for diverting aqueous liquid medium stripped for essentially all of said volatile compounds from said stripper unit to said shunt.

7 (previously presented). The system according to claim 1 wherein the shunt further comprises a pre-degassing unit for removing at least one undesirable gas affecting ammonia stripping from the organic material before the remaining part of the organic material is contacted by the cold steam generated by the evaporator.

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8-9 (Cancelled)

10 (original). The system according to claim 1, wherein said reference pressure is 1 bar.

11 (original). The system according to claim 10, wherein the first pressure is from about 0.05 to about 0.4 bar.

12. (Cancelled)

13 (original). The system according to claim 10, wherein the second pressure is from about 2 to 3 bar.

14-17 (Cancelled)

18 (previously presented). A mobile unit comprising the system according to claim 1, wherein said mobile unit can be connected to a fixed installation in the form of at least one fermentor and/or at least one biogas reactor.

19 (previously presented). A plant for processing organic material comprising solid and liquid parts, said plant comprising the system according to claim 1, said plant further comprising at least one fermentor and/or at least one biogas reactor, wherein said organic material is fermented at mesophilic and/or thermophilic conditions.

20-24 (Cancelled)

25 (previously presented). The processing plant according to claim 19 comprising

- i) a lime pressure cooker for hydrolysing the organic material,
- ii) a stripper tank for stripping ammonia from said lime

pressure cooked organic material, and

wherein said at least one fermentor and/or at least one biogas reactor is for fermenting said lime pressure cooked and ammonia stripped organic material.

26-29 (Cancelled)

30 (previously presented). The plant according to claim 25, wherein the lime pressure cooker comprises a single chamber and a stirrer, an entry port for entering organic material to be lime pressure cooked, and an outlet for diverting the lime pressure cooked organic material to a mixing tank or to said at least one fermentor and/or at least one biogas reactor connected to said system.

31-48. (Cancelled)

49 (previously presented). The plant according to claim 25, wherein the stripper tank is connected to at least one fermentor and/or at least one biogas reactor connected to said system.

50 (previously presented). The plant according to claim 49, wherein the stripper tank is connected to a biogas producing multi-step fermentor system comprising three fermentors capable of operating at both thermophile conditions and mesophile conditions, wherein each fermentor is connected to said system.

51-57 (Cancelled)

58 (previously presented). The plant according to claim 49 further comprising a decanter centrifuge for separating fermented organic material into a semi-solid fraction comprising 30-40% (w/w) dry matter of which 2 to 10% (w/w) is phosphor, and a liquid fraction comprising reject water, further comprising means

for diverting said liquid fraction obtained from said decanter centrifuge to said stripper device.

59 (previously presented). The method of claim 68 wherein said volatile compounds include ammonia and said liquid medium of step a) is reject water.

60-67 (Cancelled)

68 (previously presented). A method for controlling the fermentation of organic material comprising undesirable volatile compounds, said method comprising the steps of

- a) providing a fermentor comprising a liquid medium comprising organic material and a biomass capable of fermenting said organic material,
- b) diverting said liquid medium to a side stream of the fermentor in the form of a shunt,
- c) contacting said liquid medium in said shunt with cold steam at a first pressure below 1 bar, thereby obtaining a cold steam comprising volatile compounds and liquid medium at least partly stripped for volatile compounds,
- d) condensing said cold steam comprising volatile compounds, thereby obtaining a first condensed liquid medium,
- e) injecting hot steam into said first condensed liquid medium at a second pressure of at least 1 bar,
- f) stripping off at least part of said volatile compounds comprised in said first condensed liquid medium, and obtaining a hot steam of volatile compounds and a condensed liquid medium stripped for essentially all volatile compounds, and
- g) redirecting said liquid medium at least partly stripped for volatile compounds in step c) to said fermentor, and/or returning said condensed liquid medium stripped for essentially all volatile compounds in step f) to said shunt or to said fermentor, wherein said stripping of volatile compounds and said redirection of said at least partly stripped liquid medium controls the

fermentation of said organic material.

69 (currently amended). A method for stripping volatile compounds from a liquid medium, said method comprising the steps of

- a) providing an aqueous liquid medium comprising volatile compounds, and
- b) diverting said liquid medium comprising volatile compounds to a shunt operably linked to a heating source and a condensing device,
- c) obtaining cold steam in ~~the~~ an evaporator by adding heat to a sample of aqueous liquid and reducing the pressure below a predetermined reference pressure, and
- d) directing said cold steam through said liquid medium comprising volatile compounds in the shunt of the stripper device at said pressure below ~~a~~ the predetermined reference pressure, thereby stripping off volatile compounds and obtaining a cold volatile compound-comprising steam, and
- e) diverting said cold volatile compound-comprising steam at said pressure below ~~a~~ the predetermined reference pressure to a first condensing device, and
- f) condensing in a first condensing step said cold volatile compound-comprising steam at said pressure below ~~a~~ the predetermined reference pressure, thereby obtaining a first condensed aqueous liquid medium comprising volatile compounds, and
- g) diverting said first condensed aqueous liquid medium comprising volatile compound to a stripper unit, and
- h) stripping off the volatile compound from said first condensed aqueous liquid medium comprising volatile compound by heating said first condensed aqueous liquid in said stripper unit at a higher second pressure, ~~preferably a pressure of 1 bar or more,~~ and obtaining a liquid with a reduced concentration of volatile compounds.

70-100 (Cancelled)

101 (previously presented). The system according to claim 7 wherein each undesirable gas is selected from the group consisting of methane, carbon dioxide and hydrogen disulphide.

102 (previously presented). The method according to claim 69, where said predetermined reference pressure is 1 bar.

103 (previously presented). The system according to claim 1, further including means for diverting said aqueous liquid medium stripped for at least part of said volatile compounds back to one of the at least one fermentor and/or at least one biogas reactor from which the liquid medium was originally obtained.

104 (previously presented). The system according to claim 10, wherein the first pressure is from about 0.1 to 0.2 bar.

105 (currently amended). The system according to claim 1, said system further comprising a phase separator and means for diverting said condensate comprising volatile compounds and ~~vapour~~ vapor not condensed by the second condensing device from said second condensing device to a phase separator for separating said condensate comprising volatile compounds and ~~vapour~~ vapor not condensed by the second condensing device.

106 (currently amended). The system according to claim 10, said system further comprising at least one air scrubber for cleaning said ~~vapour~~ vapor not condensed by the first condensing device and/or said ~~vapour~~ vapor not condensed by the second condensing device.

107 (previously presented). The plant according to claim 19, said system further comprising a stripper tank for stripping nitrogenous compounds from the organic material prior to

fermentation or biogas production.

108 (previously presented). The plant according to claim 19, said system comprising a pre-treatment tank for hydrolysing organic material prior to an initial stripping of nitrogenous compounds from the organic material and/or prior to fermentation and/or biogas production of the organic material.

109 (previously presented). The plant according to claim 19, said system further comprising a lime pressure cooker for hydrolysing organic material.

110 (previously presented). The plant according to claim 19, said system further comprising at least one silage storage tank for generating ensiled plant material.

111 (previously presented). The plant according to claim 110, said system further comprising a pre-treatment fermenting tank for fermenting silage and/or lime pressure cooked organic material, in which the fermentation conditions are selected from mesophilic fermentation conditions and/or thermophilic fermentation conditions.

112 (previously presented). The plant according to claim 25, said system further comprising a reception station for receiving organic material comprising solid parts and a transport and homogenisation system for homogenizing organic material comprising solid parts and transporting the homogenized organic material comprising solid parts to the lime pressure cooker.

113 (previously presented). The plant according to claim 112, wherein the transport and homogenisation system comprises screw conveyors and an integrated macerator.

114 (previously presented). The plant according to claim 112,

wherein the reception station is fitted with screw conveyors in the floor of the reception section, and wherein the transport and homogenisation system can receive the organic material comprising solid parts from the screw conveyors located in the floor of the reception station.

115 (currently amended). The plant according to claim 112, wherein the lime pressure cooker is also connected to a reception tank for receiving liquid organic material ~~such as organic slurries~~, wherein liquid organic material can be diverted from said reception tank to said lime pressure cooker.

116 (currently amended). The plant according to claim 30, wherein a container for lime addition is connected to the lime pressure cooker, and wherein the mixing tank connected to the lime pressure cooker is also connected to ~~the~~ a reception tank for receiving organic slurries, wherein the mixing tank is used for mixing lime pressure cooked organic material with organic slurries diverted to the mixing tank from ~~the~~ a reception tank.

117 (previously presented). The plant according to claim 116, wherein the container for lime addition comprises a by-pass for adding lime directly into the mixing tank.

118 (previously presented). The plant according to claim 116, wherein the mixing tank is connected to the stripper tank so that the mixture of the lime pressure cooked organic material and the organic slurries from the reception tank can be pumped into the stripper tank.

119 (previously presented). The plant according to claim 118, wherein the stripper tank is further connected to the reception tank in order to receive organic slurries from the reception tank and also connected to the lime pressure cooker in order to receive lime pressure cooked organic material from the lime

pressure cooker.

120 (previously presented). The plant according to claim 30, wherein the mixing tank and the stripper tank are connected by a macerator for macerating lime pressure cooked organic material and organic slurries to be diverted from the mixing tank to the stripper tank.

121 (currently amended). The plant according to claim 30, wherein the stripper tank is connected to an absorption system comprising a base ~~adsorber~~ absorber for ~~adsorbing~~ absorbing acidic compounds, an acid ~~adsorber~~ absorber for adsorbing basic compounds, and a hypochlorite oxidizer for oxidizing neutral compounds.

122 (currently amended). The plant according to claim 121, wherein the acid ~~adsorber~~ absorber absorbs ammonia stripped from the stripper tank.

123 (currently amended). The plant according to claim 122, wherein the absorption ~~unit~~ system is connected to a sulphuric acid tank and to a tank for storing ~~the~~ a final ammonia condensate.

124 (currently amended). The plant according to claim 121, wherein the lime pressure cooker is also connected to the absorption ~~unit~~ system, and wherein any ammonia stripped from the lime pressure cooked organic material is also diverted to the absorption ~~unit~~ system.

125 (currently amended). The plant according to claim 25, wherein the plant further comprises an animal housing system connected to a collection tank for collection of organic slurries produced by the animals in the animal housing system, wherein the collection tank is connected by a pump to ~~the~~ a reception tank

for receiving organic slurries so that organic slurries can be pumped from the collection tank to ~~the~~ a reception tank.

126 (previously presented). The plant according to claim 125, wherein the collection tank is located below the floor of the animal housing system so that organic slurries can be diverted to the collection tank by means of gravitation.

127 (previously presented). The plant according to claim 25, wherein the system further comprises a pre-treatment fermentation tank for fermenting lime pressure cooked organic material before the lime pressure cooked organic material is subjected to a second ammonia stripping step in the stripper tank for stripping ammonia from said lime pressure cooked and fermented organic material.

128 (previously presented). The plant according to claim 25, wherein the plant further comprises a pre-treatment fermentation tank for fermenting organic material before the organic material is subjected to lime pressure cooking and ammonia stripping.

129 (previously presented). The plant according to claim 127, wherein the stripper tank and/or the lime pressure cooker is connected to a silage store comprising a fermentable organic material.

130 (previously presented). The plant according to claim 129 further comprising an anerobic pre-treatment fermentation tank capable of removing gasses or odourants from silaged organic material and/or lime pressure cooked organic material, and wherein the silaged organic material and/or the lime pressure cooked organic material can be diverted to the anaerobic fermentation tank before being subsequently diverted to the stripper tank.

131 (previously presented). The plant according to claim 130, wherein the anaerobic pre-treatment fermentation tank is a thermophilic fermentation tank.

132 (previously presented). The plant according to claim 130, wherein the anaerobic pre-treatment fermentation tank is a mesophilic fermentation tank.

133 (previously presented). The plant according to claim 49, wherein the at least one biogas producing fermentor is connected to a tank for collection of biogas.

134 (previously presented). The plant according to claim 49 further comprising a gas cleaning unit for removing hydrogen sulphide and other odourants present in the produced biogas.

135 (previously presented). The plant according to claim 49 further comprising a gas fired engine connected to a generator for production of electric power and heat.

136 (previously presented). The plant according to claim 135, wherein the plant comprises pumps, valves and pipes allowing use of the energy generated by the gas fired engine for heating the stripper tank.

137 (previously presented). The plant according to claim 133, wherein the plant further comprises an outlet for diverting the biogas into a commercial biogas pipeline system.

138 (previously presented). The plant according to claim 49 further comprising a liquid biomass tank for diverting liquid biomass to the at least one biogas producing fermentor.

139 (currently amended). The plant according to claim 58 further comprising a reverse osmosis unit for separating potassium from

the liquid fraction comprising reject water from which ammonia has been stripped, wherein the reverse osmosis unit comprises a) a pre-filter, and b) a reverse osmosis filter for filtering ~~the~~ a permeate resulting from ceramic filtration.

140 (previously presented). The plant according to claim 139, wherein the pre-filter separates particles larger than 0.1 μm (microns) from the reject water.

141 (previously presented). The plant according to claim 139, wherein the pre-filter separates particles larger than 0.01 μm (microns) from the reject water.

142 (previously presented). The plant according to claim 139, wherein the pre-filter separates particles larger than 0.001 μm (microns) from the reject water.

143 (cancelled).

144 (currently amended). The plant according to claim 139, wherein the permeate is used for flushing ~~the~~ manure canals of ~~the~~ an animal housing system.

145 (previously presented). The method of claim 69, wherein the system according to claim 1 is used for operating the method.

146 (currently amended). The method of claim 69, wherein in step f) is further obtained a vapor not condensed by the first condensing device, and said vapor not condensed by the first condensing device is diverted to a further condensing device at said pressure below a predetermined reference pressure, removing part of the remaining volatile compounds from said vapor not condensed by the first condensing device by washing in a counter current of aqueous liquid, obtaining a aqueous liquid fraction comprising volatile compounds and ~~vapour~~ vapor not condensed by

the further condensing device.

147 (currently amended). The method of claim ~~69~~ 146, wherein in step g) said aqueous liquid fraction ~~of claim 146~~ comprising volatile compounds is further diverted to said stripper unit, and wherein in step h) volatile compounds are stripped from said first condensed aqueous liquid medium comprising volatile compounds and said aqueous liquid fraction comprising volatile compounds by heating at said second pressure, thereby obtaining a hot volatile compounds-comprising steam and aqueous liquid stripped off at least part of said volatile compounds.

148 (currently amended). The method of claim 147, wherein said hot volatile compound-comprising steam is diverted to a second condensing device, condensing said hot volatile compound-comprising steam at or above said reference pressure, thereby obtaining a second condensed aqueous liquid medium comprising volatile compounds and ~~vapour~~ vapor not condensed by the second condensing device.

149 (previously presented). The method of claim 69, wherein the aqueous liquid medium stripped for at least part of said volatile compounds is returned to the fermentor or biogas reactor from which the liquid medium was originally obtained.

150 (previously presented). The method of claim 149, wherein the aqueous liquid medium returned to the fermentor or biogas reactor is stripped for at least 20% of its content of volatile compounds.

151 (currently amended). The method of claim 69, wherein said predetermined reference pressure is 1 bar.

152 (previously presented). The method of claim 151, wherein the first pressure is from about 0.1 to 0.42 bar.

153 (previously presented). The method of claim 151, wherein the second pressure is from about 1 to 4 bar.

154 (previously presented). The method of claim 69, wherein said volatile compound is selected from the group of ammonia and volatile amines.

155 (previously presented). The method of claim 154, wherein said volatile compound is ammonia.

156 (currently amended). The method of claim 69, wherein said pressure below a predetermined reference pressure is obtained in the evaporator, the shunt, the first condensing device and ~~the~~ a further condensing device.

157 (previously presented). The method of claim 69, wherein said pressure in the evaporator below a predetermined reference pressure is in the range of from 0.1 to 1.0 bar.

158 (currently amended). The method of claim 157, wherein said pressure below a predetermined reference pressure in the first condensing device and in ~~the~~ a further condensing device is about 0.2 bar.

159 (previously presented). The method of claim 157, wherein the pressure in the stripper unit is about 2.5 bar.

160 (previously presented). The method of claim 69, wherein the cold steam is obtained by heating aqueous liquid in the evaporator to a temperature of 50 to 80°C.

161 (currently amended). The method of claim 69, wherein the temperature of said first condensed aqueous liquid medium comprising volatile compounds and/or ~~said vapour~~ vapor not condensed by the first condensing device is 15-35°C.

162 (currently amended). The method of claim 69, wherein the temperature of ~~said~~ a counter current of aqueous liquid in ~~the~~ a further condensing device is 15-35°C.

163 (previously presented). The method of claim 69, wherein the temperature of said first condensed aqueous liquid medium comprising volatile compounds and/or of said aqueous liquid fraction comprising volatile compounds in the stripper unit is 80-170°C.

164 (previously presented). The method of claim 163, wherein the temperature is from about 100°C to about 150°C.

165 (currently amended). The method of claim 69, wherein the temperature of ~~said~~ a second condensed aqueous liquid and/or ~~vapour~~ vapor not condensed by ~~the~~ a second condensing device is 15-45°C.

166 (previously presented). The method of claims 69, wherein said aqueous liquid medium comprising volatile compounds comprises an amount of from 2.5 to 85 kg volatile compounds per m³ (cubic meter).

167 (previously presented). The method of claim 69, wherein the liquid medium comprising volatile compounds is liquid medium comprising organic materials.

168 (previously presented). The method of claim 69, wherein the cold volatile compounds- comprising steam comprises volatile compounds in a concentration of about 0.53 to 109 % volatile compounds.

169 (currently amended). The method of claim 69, wherein said aqueous liquid medium comprising a reduced concentration of volatile compounds is ~~re-directed~~ directed to a bioreactor.

170 (currently amended). The method of claim 69, wherein biomasses selected from the group consisting of meat and bone meal, vegetable protein, molasses, ~~and vinasse, and combinations thereof~~ are fermented, ~~including any combination thereof~~.

171 (currently amended). The method of claim 170, wherein the amount of meat and bone meal fermented in ~~the~~ a bioreactor comprises more than 2.5% of the total biomass by weight.

172 (currently amended). The method of claim ~~69~~ 169, wherein the bioreactor is a mesophilic or thermophilic bioreactor.

173 (previously presented). The method of claim 69, wherein the heating process in the evaporator is conducted by using heat exchangers reusing heat from machines, engines or motor generators, or by adding to the evaporator warm waste aqueous liquids, or aqueous liquid obtained from a cooling/condensing device.

174 (previously presented). The method of claim 69, wherein the volatile compound is ammonia, and wherein said condensed aqueous, ammonia comprising liquid resulting from condensation in said second condensing device is of commercial fertiliser grade.

175 (currently amended). The method of claim 69, wherein said ~~vapour~~ vapor not condensed by the second and/or second condensing device is directed to an air scrubber or directly to the atmosphere.